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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Parts 22, 90 and 94 of the Commission's Rules to Permit Routine Use of Signal Boosters	)	WT Docket No. 95-70

To: The Commission

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COMMENTS OF HEWLETT-PACKARD COMPANY

Hewlett-Packard Company ("HP") hereby submits these comments in response to the Notice of Proposed Rulemaking ("NPRM"), WT Docket No. 95-70, FCC 95-204, released in the above-captioned proceeding on June 22, 1995.

INTRODUCTION AND SUMMARY

HP is a manufacturer of medical telemetry systems operating in the 450-470 MHz band and subject to Part 90 of the Commission's rules. HP's systems are used in hospital cardiac care units and other hospital settings to monitor the cardiac status of patients at risk for life-threatening cardiac events, without the patients being directly cabled to a monitoring system. By allowing cardiac patients to walk within limited hospital areas, telemetry systems help speed their recovery, reducing the length of hospital stays and health care costs. Hundreds of hospitals in the United States use tens of thousands of HP telemetry transmitters, in addition to those of other manufacturers.

While signal boosters serve important functions, HP is concerned that the proposed amendments to Part 90, as they affect the 450-470 MHz band, would inadequately protect medical telemetry against harmful interference.[1] Furthermore, on the day after the NPRM was released, the Commission promulgated final rules in its Report and Order, PR Docket No. 92-235, FCC 95-255 (June 23, 1995), (the "Refarming Decision"), which contains a variable bandwidth provision, Section 90.209, that adds

[1] HP's comments apply only to proposed amendments to Part 90 of the Commission's rules as they affect channels in the 450-470 MHz band, and not to the proposed amendments to Parts 22 and 94. or Part 90 frequencies other than the 450-470 MHz band.

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additional ambiguities to the rules proposed in this NPRM. Therefore, and for the following reasons, the Commission should prohibit the operation of broadband signal boosters in the 450-470 MHz band and require waivers to use narrowband signal boosters in the band.

OPERATING CHARACTERISTICS OF MEDICAL TELEMETRY SYSTEMS

HP's medical telemetry systems continuously transmit digitized electrocardiograph ("ECG") waveforms and other critical patient information, which are constantly monitored by hospital personnel. The systems consist of a small, patient-worn transmitter and central receivers that receive signals from a number of transmitters. Each transmitter uses one channel and some hospitals use more than 200 transmitters. The devices currently operate on approximately 270 12.5 kHz Business Radio Service offset channels in the 450-470 MHz band.

HP's telemetry transmitters operate at extremely low power (less than 5 mW). Low-power operation is dictated by the requirements that the transmitters operate continuously for several days and that some cardiac patients cannot carry any item that weighs more than a few ounces. Low-power operation allows reuse of these channels by other nearby hospitals (separated by a mile or so) and other very low-power users without interference. Their low power, however, makes the telemetry receivers very sensitive to co-channel and adjacent channel interference. Such interference, even if it lasts only a few seconds, can disrupt the reception of the ECG waveform, which may prevent the detection of a cardiac event and the triggering of a patient monitor alarm to alert hospital personnel of a possible emergency.

While hospitals naturally attempt to avoid using channels that frequently are subject to interference, those with a large number of telemetry beds have difficulty finding a sufficient number of low-interference channels. Signal boosters operating unfettered in the 450-470 MHz band, as proposed by the Commission, would increase the potential for interference significantly and would make it difficult, if not impossible, for hospitals to find a sufficient number of low-interference channels.

BROADBAND SIGNAL BOOSTERS SHOULD BE PROHIBITED IN THE 450-470 MHz BAND AND NARROWBAND SIGNAL BOOSTERS SHOULD BE AVAILABLE ONLY THROUGH THE WAIVER PROCESS

It is unclear whether the proposed rules would allow any broadband (Class B)

signal boosters at all in the 450-470 MHz band, since they seem to require that the licensee operating the booster be licensed on every channel (narrowband or not) in its passband and that the booster not extend the coverage area of any channel in its passband. Broadband boosters would amplify even low-power channels in their pass-band, including those used for medical telemetry, thereby negating one of the key efficiency advantages of such channels — channel reuse because of their small coverage area.[2] To resolve any ambiguity, however, the Commission explicitly should forbid their use in that band.

With respect to any narrowband booster proposed for operation in the 450-470 MHz band, HP disagrees with the proposal set out in the NPRM, which would permit boosters to be placed in operation without any notice to other users regarding the signal booster's location or operation. First, commencing operation of a signal booster without prior notice may cause a medical telemetry unit to become unusable without warning due to interference, placing the patient being monitored at risk and putting the unit out of operation until it can be serviced and converted to a different channel, provided that any low-interference channels remain. Second, if the hospital or any other licensee suspected that a signal booster was causing interference, it would be difficult to identify the operator of the booster or its location, since these channels are shared and there would be no public record concerning the booster.

Accordingly, narrowband signal boosters should continue to be available in the 450-470 MHz band only under a waiver procedure, as is currently the case. In addition, applicants should be required to provide any nearby hospitals with notice of the request for a waiver.

CONCLUSION

Because of potential interference of signal boosters operating under Part 90 in the 450-470 MHz band with life-critical medical telemetry systems, HP urges the Commission to prohibit the use of broadband signal boosters in the band, maintain its

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[2] The proposed power limitation on Part 90 broadband signal boosters is particularly unclear when applied to the new channelization scheme promulgated in the Refarming Decision. The NPRM limits per-channel output power to "the total output power (500 mW) divided by the number of channels amplified." Proposed Section 90.219(b). It is unclear whether the number of channels means the total number of 6.25 kHz narrowband channels, 12.5 kHz channels, 25 kHz channels, or some combination that depends on how the individual channels in the passband are actually licensed.

current waiver process for narrowband signal boosters, and require that hospital licensees be notified of proposed signal booster operation.

Respectfully submitted,

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